AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

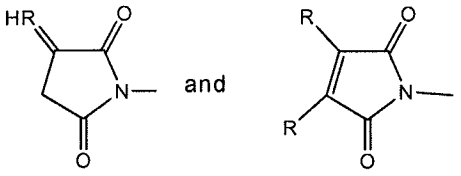
1. (previously presented): A composition comprising a solvent and a block copolymer, in which the block copolymer comprises a hydrophilic core block and at least two terminal blocks, each terminal block being responsive to a stimulus selected from a change in concentration of ions in the composition, imposition of shear, irradiation with electromagnetic radiation, a change in temperature, and a change in pH, in which the blocks are each formed at least in part by the polymerisation of ethylenically unsaturated monomers, wherein an average degree of polymerisation of each terminal block is at least 20 characterised in that the core block comprises zwitterionic pendant groups, and has a degree of polymerisation of at least 100.

2. (original): A composition according to claim 1 which has an A-B-A structure, the B block being the core block and the A blocks being the terminal blocks.

3. (previously presented): A composition according to claim 1 in which the monomers from which the core block is formed comprise compounds of the general formula I

$$Y - B - X \qquad I$$

in which Y is an ethylenically unsaturated group selected from H_2C=CR-CO-A-, H_2C=CR-C_6H_4-A^1-, H_2C=CR-CH_2A^2, R^2O-CO-CR=CR-CO-O, RCH=CH-CO-O-, RCH=C(COOR^2)CH_2-CO-O,



A is -O- or NR^1;

A^1 is selected from a bond, $(CH_2)_I A^2$ and $(CH_2)_I SO_3$- in which I is 1 to 12;

A2 is selected from a bond, -O-, O-CO-, CO-O, CO-NR1-, -NR1-CO, O-CO-NR1-, NR1-CO-O-;

R is hydrogen or C1-4 alkyl;

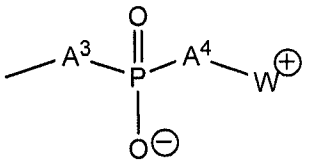
R1 is hydrogen, C1-4- alkyl or BX;

R2 is hydrogen or C1-4 alkyl;

B is a bond, or a straight branched alkanediyl, alkylene oxaalkylene, or alkylene (oligooxalkylene) group, optionally containing one or more fluorine substituents;

X is a zwitterionic group.

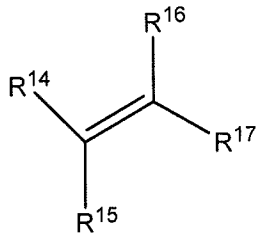
4. (previously presented): A composition according to claim 3 in which X is a group of the general formula II



II

in which the moieties A^3 and A^4, which are the same or different, are -O-, -S-, -NH- or a valence bond, and W^+ is a group comprising an ammonium, phosphonium or sulphonium cationic group and a group linking the anionic and cationic moieties.

5. (previously presented): A composition according to claim 1 in which the monomers from which the terminal blocks are formed comprise compounds of the formula VI



VI

where R^{14} is selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl and groups $COOR^{18}$ in which R^{18} is selected from the group consisting of hydrogen and C_{1-4} alkyl;

R^{15} is selected from the group consisting of hydrogen, halogen and C_{41-} alkyl;

R^{16} is selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl and groups $COOR^{18}$ provided that R^{14} and R^{16} are not both $COOR^{18}$

or R^{14} and R^{16} may together form $CONR^{19}CO$ in which R^{19} is a C_{1-20} alkyl group; and

R^{17} is selected from the group consisting of C_{1-10} alkyl, C_{1-20} alkoxycarbonyl, mono- and di- (C_{1-20} alkyl) amino carbonyl, C_{6-20} aryl, C_{7-20} aralkyl, C_{6-20} aryloxy carbonyl, C_{7-20} aralkoxyl carbonyl, C_{6-20} arylamino carbonyl, C_{7-20} aralkyl amino carbonyl, C_{2-20} aralkylamino and C_{2-10} acyloxy groups, in which an alkyl or aryl group has a substituent which is responsive to a stimulus and in which any of the alkyl or aryl groups may additionally be substituted by one or more substituents selected from halogen atoms, alkoxy, oligo-alkoxy, aryloxy, acyloxy, acylamino, amine, carboxyl, sulphonyl, phosphoryl, phosphino, zwitterionic, hydroxyl groups, vinyloxycarbonyl and other vinylic or allylic substituents, and reactive silyl or silyloxy groups, such as trialkoxysilyl groups.

6. (original): A composition according to claim 5 in which the stimulus responsive substituent is a proton donor or proton acceptor.

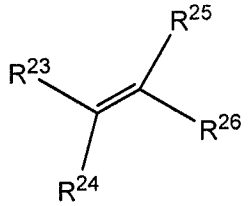
7. (previously presented): A composition according to claim 6 in which the stimulus responsive substituent comprises a group selected from carboxylic, carboxylate, SO_3H, SO_3-,

PO_3HR^{20} and PO_2-R^{20} and PO_3^{2-}, in which R^{20} is selected from the group consisting of hydroxyl, C_{1-12} alkyl C_{1-12} alkoxy, C_{6-18} aryl, C_{6-18} aryloxy, C_{7-18} aralkyl and C_{7-18} aralkoxy.

8. (original): A composition according to claim 6 in which the stimulus responsive substituent is selected from the group consisting of NR^{21}_2, $N^+R^{21}_2H$, PR^{22}_2, $P^+R^{22}_2H$, SR^{21}, $S^+R^{21}H$, wherein the or each group R^{21} is selected from the group consisting of hydrogen, optionally substituted C_{1-20} alkyl and aryl, or the two groups R^{21} are joined to form, together with the heteroatom to which they are each attached, a 5-7 membered heterocycle, and each R^{22} is R^{21} or OR^{21}.

9. (currently amended): A composition according to claim 8 in which the compound of the formula VII is ω-(N,N-dialkylamino)alkyl-(alk)acrylate or (alk)acrylamide~~, preferably 2-(diisopropyl amino) ethyl methacrylate~~.

10. (previously presented): A composition according to claim 1 in which the monomers from which each terminal block and/or the core block is formed comprise comonomers, selected from compounds of the general formula VII



VII

in which R^{23} is selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl and groups $COOR^{27}$ in which R^{27} is hydrogen and C_{1-4} alkyl;

R^{24} is selected from the group consisting of hydrogen, halogen and C_{1-4} alkyl;

R^{25} is selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl and groups $COOR^{27}$ provided that R^{23} and R^{25} are not both $COOR^{27}$; and

R^{26} is selected from the group consisting of C_{1-10} alkyl, C_{1-20} alkoxycarbonyl, mono- and di-(C_{1-20} alkyl) amino carbonyl, C_{6-20} aryl (including alkaryl), C_{7-20} aralkyl, C_{6-20} aryloxycarbonyl, C_{7-20}-aralkyloxycarbonyl, C_{6-20} arylamino carbonyl, C_{7-20} aralkyl-amino carbonyl, hydroxyl and carboxylic C_{2-10} acyloxy groups, any of which may have one or more substituents selected from the group consisting of halogen atoms, alkoxy, oligo-alkoxy, aryloxy, acyloxy, acylamino, amine, carboxyl, sulphonyl, phosphoryl, phosphino, zwitterionic, hydroxyl, vinyloxycarbonyl and other vinylic and allylic groups, and reactive silyl and silyloxy groups, such as trialkoxysilyl groups;

or R^{26} and R^{25} or R^{25} and R^{23} may together form -$CONR^{28}CO$ in which R^{28} is a C_{1-20} alkyl group.

11. (previously presented): A composition according to claim 1 in which the mean degree of polymerisation of the core block is in the range 100 to 10,000.

12. (previously presented): A composition according to claim 1 in which the polydispersity of block weight of the core block is in the range 1.1 to 2.0.

13. (previously presented): A composition according to claim 1 in which the mean degree of polymerisation of the terminal blocks is in the range 30 to 100.

14. (previously presented): A composition according to claim 1 in which the polydispersity of block weight of the terminal blocks is in the range 1.1 to 3.0.

15. (previously presented): A composition according to claim 1 in which the ratio of the mean degree of polymerisation of the core block to the mean degree of polymerisation of each of the terminal blocks is in the range 20:1 to 1:1.

16. (previously presented): A composition according to claim 1 in which the solvent is aqueous.

17. (original): A composition according to claim 6 in which the said substituent is a proton acceptor having a pH more than the pK_A of the conjugate acid of the said substituent.

18. (original): A composition according to claim 6 in which the said substituent is a proton acceptor, having a pH less than the pK_A of the conjugate acid of the said substituent.

19. (original): A composition according to claim 6 in which the said substituent is a proton donor having a pH more than the pK_A of the said substituent.

20. (original): A composition according to claim 6 in which the said substituent is a proton donor, having a pH less than the pK_A of the said substituent.

21. (previously presented): A composition according to claim 1 which is a gel.

22. (previously presented): A composition according to claim 1 which is a liquid.

23. (previously presented): A composition according to claim 1 which comprises a biologically active agent.

24. (previously presented): A composition according to claim 1 which comprises an imaging agent.

25. (previously presented): A method in which a composition comprising a solvent and a block copolymer, in which the block copolymer comprises a hydrophilic core block and at least two terminal blocks, each terminal block being responsive to a stimulus selected from a change in concentration of ions in the composition, imposition of shear, irradiation with electromagnetic radiation, a change in temperature, and a change in pH, in which the blocks are each formed at least in part by the polymerisation of ethylenically unsaturated monomers, wherein the average degree of each terminal block is at least 20 characterised in that the core block comprises zwitterionic pendant groups, and has a degree of polymerisation of at least 100 is subjected to a stimulus selected from a change in concentration of ions in the composition,

imposition of shear, irradiation with electromagnetic radiation, a change in temperature, and a change in pH, to which the terminal blocks respond, whereby the terminal blocks respond to the stimulus to change the mechanical characteristics of the composition.

26. (original): A method according to claim 25 in which the stimulus is subsequently removed, whereupon the mechanical characteristics of the composition revert at least in part to their original values.

27. (previously presented): A method according to claim 25 in which the stimulus is a change in the pH.

28. (previously presented): A method according to claim 25 in which the stimulus is selected from the group consisting of temperature change, shear, change in dissolved ion concentration and electromagnetic irradiation.

Claims 29-42. Canceled.

43. (previously presented): A composition according to claim 4 in which W^+ is a group of formula

$-W^1-N^+R^3_3$, $-W^1-P^+R^4_3$, $-W^1-S^+R^4_2$ or $-W^1-Het^+$ in which:

W^1 is alkanediyl of 1 or more carbon atoms optionally containing one or more ethylenically unsaturated double or triple bonds, disubstituted-aryl (arylene), alkylene arylene, arylene alkylene, or alkylene aryl alkylene, cycloalkanediyl, alkylene cycloalkyl, cycloalkyl alkylene or alkylene cycloalkyl alkylene, which group W1 optionally contains one or more fluorine substituents and/or one or more functional groups; and

either the groups R^3 are the same or different and each is hydrogen or alkyl of 1 to 4 carbon atoms, or two of the groups R^3 together with the nitrogen atom to which they are attached form an aliphatic heterocyclic ring containing from 5 to 7 atoms, or the three groups R^3 together

with the nitrogen atom to which they are attached as heteroaromatic ring having 5 to 7 atoms, either of which rings may be fused with another saturated or unsaturated ring to form a fused ring structure containing from 5 to 7 atoms in each ring, and optionally one or more of the groups R^3 is substituted by a hydrophilic functional group, and

the groups R^4 are the same or different and each is R^3 or a group OR^3, where R^3 is as defined above; or

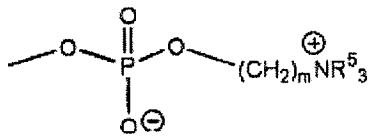
Het is an aromatic nitrogen-, phosphorus- or sulphur-containing ring.

Claim 44. Canceled.

45. (previously presented): A composition comprising a solvent and a block copolymer, in which the block copolymer has an A-B-A structure, wherein the B block is formed by polymerising ethylenically unsaturated monomers comprising a compound of the formula I

$$Y - B - X \qquad I$$

wherein Y is H_2C=CR-CO-A, R is H or C_{1-4} alkyl, A is O or NH, B is C_{2-6}-alkanediyl and X is



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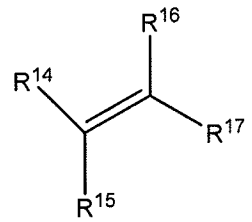
M is 1 to 4 and each R^5 is H or C_{1-4} alkyl, to an average degree of polymerisation or at least 100; and each A block is formed by polymerising ethylenically unsaturated monomers including a compound of the formula VI



VI

wherein R^{14} and R^{15} are H, R^{16} is H or C_{1-4} alkyl and R^{17} is a C_{1-20} alkoxycarbonyl or a mono- or di-(C_{1-20}) alkylaminocarbonyl group having a $NR^{21}{}_2$ substituent wherein the R^{21} groups are alkyl groups, to an average degree of polymerisation of at least 20.

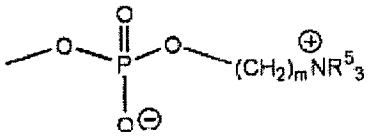
46. (previously presented): A composition according to claim 45 wherein the compound of formula I is 2-methacryloyloxy-ethyl-2′-trimethylammoniamethyl phosphate inner salt and the compound of formula VI is a dialkylaminoalkyl(alk)acrylate.

47. (previously presented): A composition according to claim 46 in which the compound of formula VI is diisopropylaminoethylmethacrylate, or dimethylaminoethylmethacrylate.

48. (previously presented): A composition comprising a solvent and a block copolymer, in which the block copolymer has an A-B-A structure, wherein the B block is formed by polymerising ethylenically unsaturated monomers comprising a compound of the formula I

$$Y - B - X \qquad I$$

wherein Y is H_2C=CR-CO-A, R is H or C_{1-4} alkyl, A is O or NH, B is C_{2-6}-alkanediyl and X is



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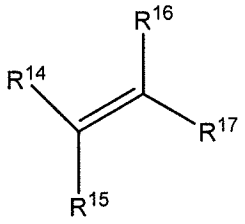
M is 1 to 4 and each R^5 is H or C_{1-4} alkyl, to an average degree of polymerisation or at least 100; and each A block is formed by polymerising ethylenically unsaturated monomers including a compound of the formula VI



VI

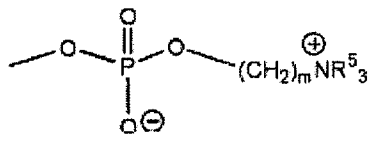
wherein R^{14} and R^{15} and H, R^{16} is H or C_{1-4} alkyl, and R^{17} is a C_{1-20} alkylcarbonyl or a mono- or di-C_{1-20} alkylaminocarbonyl group having a hydroxyl substituent.

49. (previously presented): A composition according to claim 48 wherein the compound of formula I is 2-methacryloyloxy-ethyl-2′-trimethylammoniamethyl phosphate inner salt and the compound of formula VI is hydroxyethylmethacrylate.

50. (previously presented): A composition comprising a solvent and a block copolymer, in which the block copolymer has an A-B-A structure, wherein the B block is formed by polymerising ethylenically unsaturated monomers comprising a compound of the formula I

$$Y - B - X \qquad I$$

wherein Y is H_2C=CR-CO-A, R is H or C_{1-4} alkyl, A is O or NH, B is C_{2-6}-alkanediyl and X is



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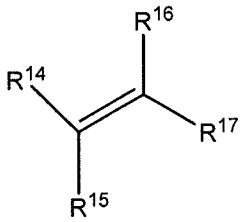
M is 1 to 4 and each R^5 is H or C_{1-4} alkyl, to an average degree of polymerisation or at least 100; and each A block is formed by polymerising ethylenically unsaturated monomers including a compound of the formula VI



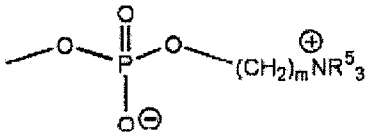
VI

wherein R^{14} and R^{15} are H, R^{16} is H or C_{1-4} alkyl, and R^{17} is a C_{1-20} alkylcarbonyl or a mono- or di-C_{1-20} alkylaminocarbonyl group having a N-morpholino group substituent.

51. (previously presented): A composition comprising a solvent and a block copolymer, in which the block copolymer has an A-B-A structure, wherein the B block is formed by polymerising ethylenically unsaturated monomers comprising a compound of the formula I

$$Y - B - X \qquad I$$

wherein Y is H_2C=CR-CO-A, R is H or C_{1-4} alkyl, A is O or NH, B is C_{2-6}-alkanediyl and X is



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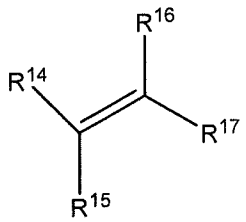
M is 1 to 4 and each R^5 is H or C_{1-4} alkyl, to an average degree of polymerisation or at least 100; and each A block is formed by polymerising ethylenically unsaturated monomers including a compound of the formula VI



VI

wherein R^{14} and R^{15} are H, R^{16} is H or C_{1-4} alkyl, and R^{17} is a N-isopropylaminocarbonyl.

52. (new): A composition according to claim 9 in which the compound of formula VII is ω-(N,N-dialkylamino)alkyl-(alk)acrylate.

53. (new): A composition according to claim 52 in which the compound of formula VII is 2-(diisopropyl amino) ethyl methacrylate.